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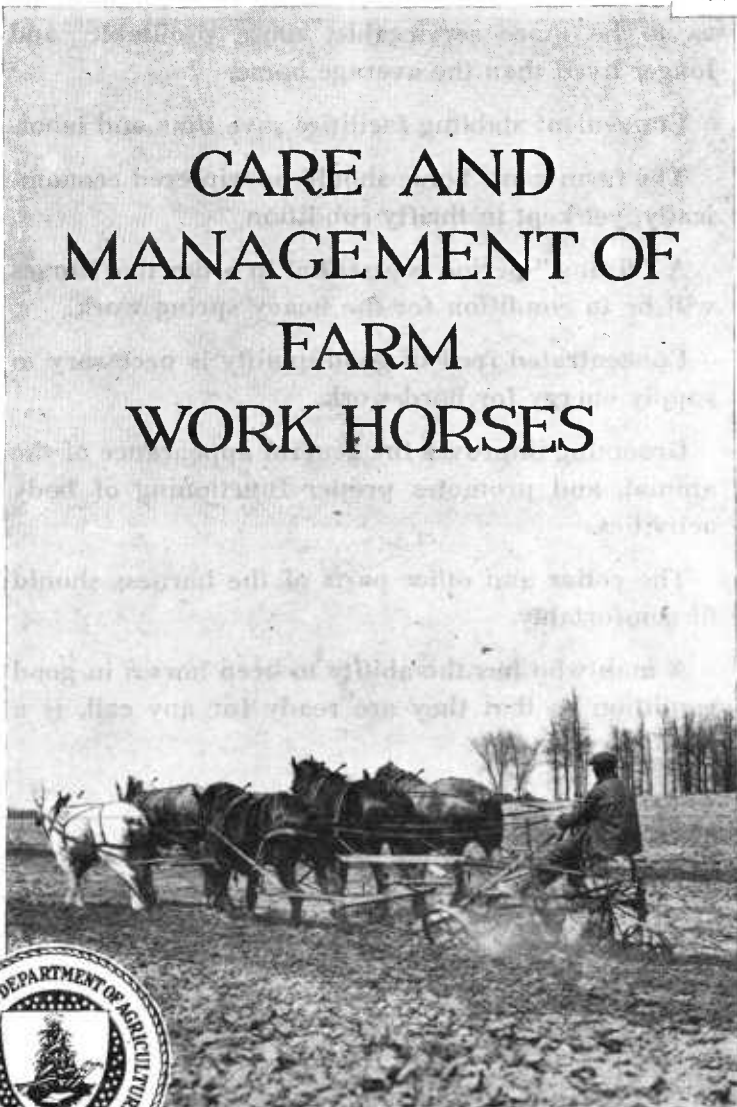
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CARE AND MANAGEMENT OF FARM WORK HORSES



THE PROPER MANAGEMENT of farm work horses means that they must be so maintained as to be more serviceable, more profitable, and longer lived than the average horse.

Convenient stabling facilities save time and labor.

The farm work horse should be wintered economically, yet kept in thrifty condition.

A "fitting" period is essential in order that horses will be in condition for the heavy spring work.

Concentrated feed of good quality is necessary to supply energy for hard work.

Grooming improves the general appearance of the animal, and promotes proper functioning of body activities.

The collar and other parts of the harness should fit comfortably.

A man who has the ability to keep horses in good condition so that they are ready for any call, is a good horseman.

CARE AND MANAGEMENT OF FARM WORK HORSES.

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IMPROVEMENT NEEDED IN HORSE HUSBANDRY.

HORSES furnish power for so many operations on the farm that improvements in horse husbandry are desirable to reduce to a minimum the cost of this power. The farm work horse must be properly cared for, and efficiently managed, if the greatest net returns are to be realized.

There is comparatively little scientific information on which to base conclusions relating to the care and management of horses. This bulletin, however, will attempt to summarize the information that is known, and to suggest methods which have proved most satisfactory by experienced horsemen.

The management of farm work horses varies with the seasons. It requires judgment on the part of the owner to feed economically, and yet keep the horses in good physical condition, so that only a minimum number need be carried for the peak periods of work.

During the winter season, some owners feed too heavily, and others do not feed enough. Both of these extremes are to be avoided.

Many farm horses are poorly fitted and conditioned for the spring work, when the heaviest demands are made on them. This practice is costly, as the efficiency of the horses is impaired, and more are required to do the work. Fitting the horse for work means not only that he carries flesh enough, but also that his system is functioning properly, that his muscles are developed and hardened, and that his shoulders have been toughened for the heavy tasks ahead.

FACTORS INVOLVED IN CARE AND MANAGEMENT.

The question of effective farm power is a vital problem. The effectiveness and reliability of horse power are determined largely by the following: (1) The man responsible should have the ability to keep the horses in thrifty condition at all times; (2) convenient stabling adjoining the paddock and suitable sheds for wintering should be provided for the comfort and health of the animals; (3) feeding must be adjusted to seasonal requirements; (4) thorough grooming is necessary; (5) the harness must be well fitted and

cleaned regularly to insure satisfaction and durability; and (6) the shoulders, feet, and teeth must be well cared for.

THE HORSEMAN.

A fundamental factor in all problems of animal husbandry is the man. In no phase of animal husbandry is this "man" element more vital than in the care of horses. The horse responds readily to the understanding and intelligence of his caretaker, and the diligence of the master often forestalls some of the things which might incapacitate the horse when his services are most needed. The virtues in an ideal caretaker include: Fondness for horses; a kind,

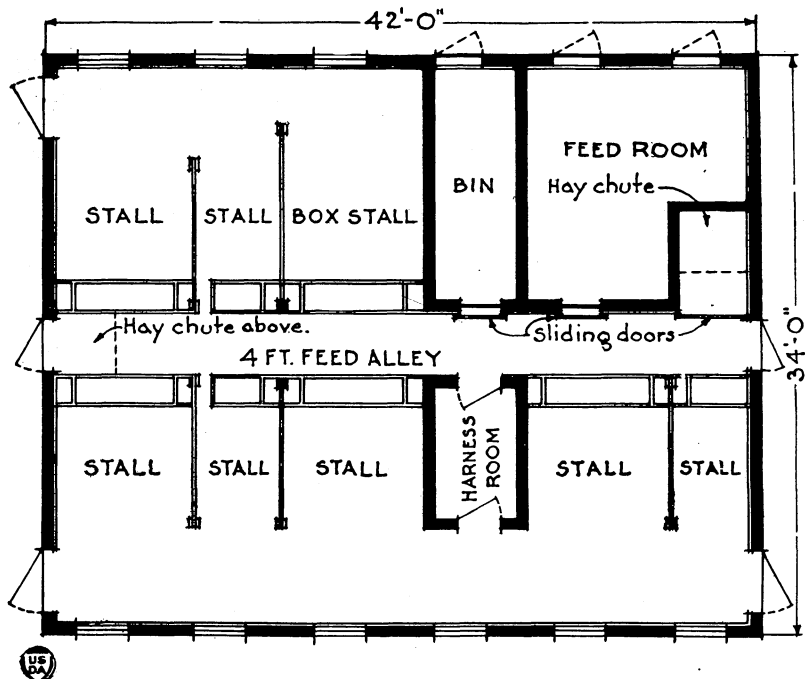


FIG. 1.—Convenient and compact stable for work horses. Complete plans and specifications may be obtained from the Bureau of Public Roads, United States Department of Agriculture, Washington, D. C.

quiet, even-tempered disposition; regularity of habits; and close observation.

When a man has the ability to keep horses in good condition so that they are ready when needed, he is a good horseman. Horsemen are spoken of as men having a "knack" for handling horses, understanding thoroughly every horse under their care, knowing how much feed is required, how much work can be accomplished in a day, and ability to detect the warning signs of overwork, overheating, and disorders of all kinds.

STABLE, SHED, AND Paddock.

Much time is saved in the care of work horses if the stable is conveniently arranged so that the chores may be done quickly, and the feed, harness, and equipment are readily accessible. (See fig. 1.) A

conveniently located harness room should be provided. By this arrangement many steps are saved and the life of the harness is prolonged. Common labor-saving appliances, such as carriers for manure, feed, and harness, are especially important in large stables. Although the box stall provides the greatest comfort, the open stall has been found satisfactory for work horses and requires less space. A good-sized single stall for a horse weighing about 1,400 pounds is 5 by 10 feet, but the stall should be wider for larger horses.

Abundance of light and proper ventilation of the stables are essential for complete sanitation and the health of the horse. Where windows are relied upon for both light and ventilation they should be high up from the floor, and open inward from the top. Ventilation¹

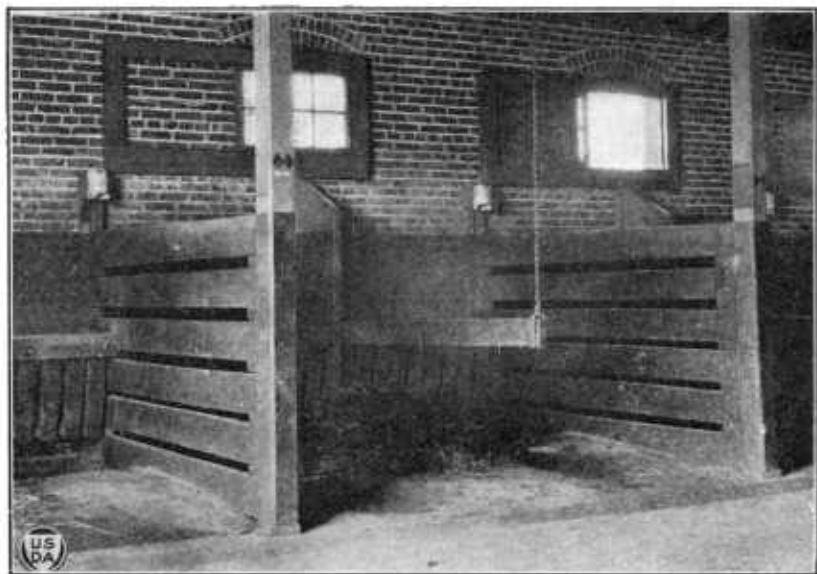


FIG. 2.—Double stall for work horses. Note the open partition, which permits free circulation of air, the slope of the clay floor, and the swinging pole. The bedding is thrown forward to the middle for sanitation.

is required in winter as well as in summer; therefore a system with floor-outlet ventilators will tend to carry off foul air and regulate the temperature, especially in colder climates. In any system of ventilation it is important that the horses are not subjected to direct drafts.

Stalls must be well bedded, and cleaned daily, in order to keep them dry and sanitary. (See fig. 2.) Wet, mucky stalls predispose to the development of thrush and similar foot troubles. Many advantages are claimed by advocates of the various kinds of floors. Concrete floors with board surfacing in the stalls are preferred by many, as they are easily kept in sanitary condition. Clay, however, is undoubtedly the best material with which to make floors for horses, but such floors are objected to by many farmers because of the difficulty in keeping them level and clean. To be satisfactory, clay floors

¹ For the principles of ventilation, see Farmers' Bulletin 1342, Dairy Barn Construction.

must be kept smooth, with slightly more slope for drainage than is required by other types of floors.

A large paddock in connection with the stable helps considerably to keep in fit condition horses that are worked irregularly. A series of sodded lots will be found preferable, as, in addition to the exercise the horse gets, he will be benefited by the grass which acts as a tonic. Paddock exercise, though not as good as regular work, helps to guard against filled hocks, azoturia (so-called Monday morning sickness) and other troubles.

When horses are wintered largely in open fields, a dry shed with the open side away from the prevailing winds will generally afford a satisfactory shelter. Although horses that are "roughed" through

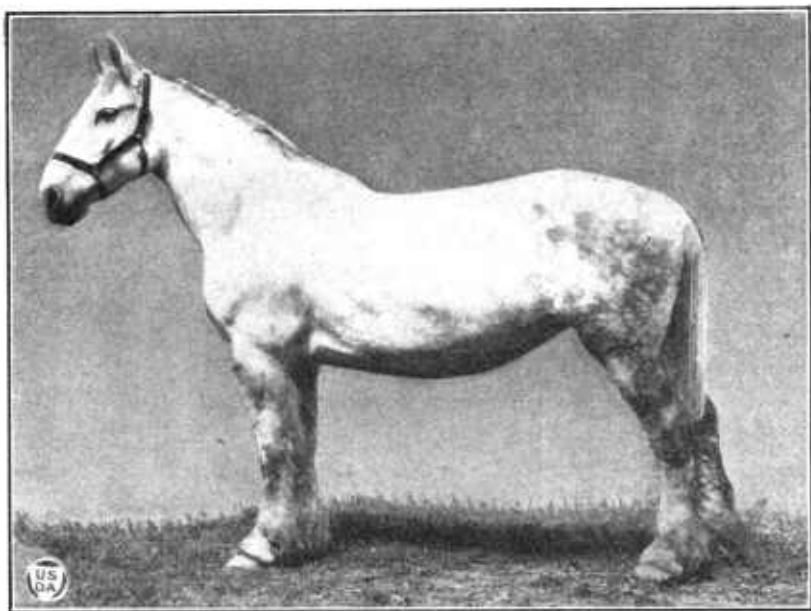


FIG. 3.—This deep-bodied, closely coupled, smoothly built mare keeps in good flesh on a small ration.

the winter in this manner develop long, heavy coats of hair which protect them from the cold, it is a mistake to assume that their coats afford sufficient protection from storms. When horses are stabled at night the shed is usually not required.

FEEDING FARM WORK HORSES.²

The most important factor in the care and management of farm work horses is feeding. Feeding methods vary in different parts of the country and with the different seasons. There is no definite standard for feeding all classes of horses, but there are certain basic rules which serve as a guide in feeding under varying work conditions. Regularity and care are of primary importance. Ir-

² For detailed information regarding the feeding of horses, the composition of feeds, and methods of computing rations, consult Farmers' Bulletin 1030, "Feeding Horses."

regular feeding, or sudden changes in rations, frequently result in digestive disorders. Any change in the ration should be made gradually, because an immediate change in feeds—for example, from oats to corn, or from old hay to new hay—may result in colic. Care in all feeding operations is necessary for complete utilization of the feed and consequent fitness for work at all times.

Trash or dirt must be removed from the grain box before each meal and chaff and refuse cleaned from the manger before the night feeding of hay. The feeder must also see to it that the feed used is of good grade. Musty, spoiled, or dirty feed may cause the horse to get "off feed" and not be fit for work.

Individuality has a special bearing on the feeding and management of work stock. (See figs. 3 and 4.) Some horses keep in good

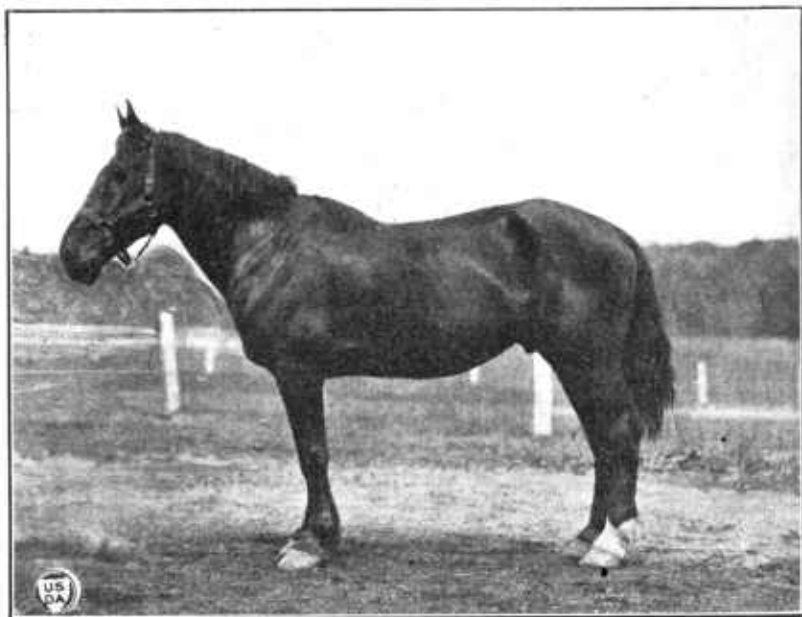


FIG. 4.—This shallow-bodied, loosely coupled horse, although smaller and on similar work, requires about one-fourth more grain daily than the mare shown in Figure 3.

condition on a minimum ration, while others require much more than the average quantity of grain and hay. The same feeds are not relished by all horses, and all feeds do not have the same effect on all horses. It is necessary, therefore, to observe each horse closely and to substitute special feeds when necessary if the best results are to be obtained.

FEEDING UNDER WORK CONDITIONS.

During the work season a horse should eat only at regular intervals. Concentrated feed is necessary to supply the energy for hard work. The use of large amounts of roughages during the work season should be limited to periods of rest. Excessive feeding of hay is a wasteful practice in many ways; it is expensive, reduces the

efficiency of the horse, and often causes respiratory disorders. It is especially important that the grains and hay be of the highest quality at this time in order to obtain the greatest return in the form of work.

The selection of nutritious, high-grade feeds is as essential as the methods of feeding and management. Inasmuch as the crops grown locally generally constitute the most economical basis for the ration, the feeds will vary with the local crops. The most common feeds for horses are oats, corn, barley, and bran, together with prairie, timothy, clover, and alfalfa hays. In the West, the grain hays are popular, while in the South, Johnson grass is widely used. Of the concentrates, oats most nearly supply the requirements for work horses and, on account of the uniformly good results obtained from their use, have always been recognized as the leading grain for them. The other grains, also, are widely used. It is often possible, however, to make substitutions in the ration, resulting in a noticeable saving, without affecting its nutritive value. The nutritive value may also be increased without increasing its cost. Bran, particularly when corn or barley is fed with timothy and the coarser roughages, improves the ration. Bran is high in protein, mildly laxative in character, and has a cooling effect on the system. The limited use of alfalfa, clover, or other legume with timothy or similar hay increases the nutritive value of the ration.

The amount of grain and hay required by the farm work horse depends, among other things, on the kind, regularity, and speed of the work performed. Although the exact amount is variable, a general guide is to allow $1\frac{1}{10}$ pounds of grain and $1\frac{1}{4}$ pounds of hay per 100 pounds live weight for horses at moderately heavy work; and $1\frac{1}{4}$ to $1\frac{3}{4}$ pounds of grain, with not to exceed $1\frac{1}{4}$ pounds of hay, at heavy work. The following table may be used as a guide in feeding:

TABLE 1.—Average weight and measure of some common feeds.

Feed.	One quart weights.	One pound measures.
	Pounds.	Quarts.
Barley, steam rolled.....	0.6	1.6
Corn, shelled.....	1.7	.6
Corn, cracked.....	1.5	.7
Cowpeas.....	1.9	.5
Linseed meal, new process.....	.9	1.1
Linseed meal, old process.....	1.1	.9
Molasses (cane, blackstrap).....	3.0	.3
Oats, whole.....	1.0	1.0
Oats, rolled.....	.5	1.9
Soybeans.....	1.8	.6
Wheat bran.....	.6	1.6
Cottonseed meal.....	1.0	1.0

The grain part of the ration for horses at work is usually divided into three equal feeds. If the horse does not clean up his grain in a reasonable length of time, the quantity should be reduced. About two-thirds of the daily hay allowance is given at night, with most of the remaining hay fed in the morning, leaving only a very small allowance for the noon feed. The quantity of roughage should be limited within the maximum allowance, so that all the edible forage will be cleaned up every day. When there is edible forage remaining from the night feeding, do not put in a fresh supply, but stir

up that which is in the manger, so that the chaff goes to the bottom, leaving the good hay available. Some hay should be fed before the grain at night, for the appetite of the horse is not appeased by the grain when it is fed first, and he fills up on hay, forcing the grain on through the stomach too quickly, thereby decreasing the quantity assimilated.

The following daily rations (Table 2) are suggested as practical combinations and quantities of feed. As the rations suggested are for the average (1,000-pound) work horse, increase the ration by one-fifth, if the horse weighs 1,200 pounds, and by two-fifths if the horse weighs 1,400 pounds. For example, in the case of the first ration, a 1,400-pound horse should receive 15.4 pounds of oats, and 8.4 pounds each of timothy and alfalfa or clover. These rations are based on the theoretical requirement of horses at rather light work, such as cultivating corn. If the horses are at heavy work, such as plowing, the grain should be increased 15 to 20 per cent, the exact amount, of course, depending on the individual animal. When the 1,000-pound horse is on light work, he generally requires not more than 10 pounds of grain daily, and will probably keep in good condition on less.

TABLE 2.—Daily rations for 1,000-pound horse at medium work.

<i>Ration 1.</i>	Pounds.	<i>Ration 4.</i>	Pounds.
Oats-----	11	Barley, rolled-----	10
Timothy hay-----	6	Alfalfa hay-----	6
Clover, or alfalfa, hay-----	6	Prairie, or timothy, hay-----	5
<i>Ration 2.</i>		<i>Ration 5.</i>	
Oats-----	6	Corn, shelled-----	11
Corn, shelled-----	5	Cowpea hay-----	6
Timothy hay-----	6	Johnson grass hay, or corn stover-----	6
Alfalfa, or clover, hay-----	6	<i>Ration 6.</i>	
<i>Ration 3.</i>		Corn, shelled-----	10
Corn, shelled-----	8	Soybeans or cowpeas (ground)-----	1
Bran, wheat-----	2	Alfalfa hay-----	6
Alfalfa hay-----	8	Corn stover-----	6
Timothy hay-----	4		

The method of feeding has a great deal to do with the utilization of the feed and the condition of the horse. Attention to the methods often results in increased utilization of the feed by the horse, and saving of feed. It is important that the horse that bolts his grain be made to eat slowly, which may be done by feeding the grain spread out in a large, flat box, by placing several smooth stones about 3 inches in diameter in the feed box, or by mixing it with bran, cut hay, or similar feed. Some horses waste their hay by pulling it out and trampling it underfoot. This is sometimes caused by feeding two kinds of hay, one of which is especially palatable. In that case, the waste may be corrected by feeding the hay so that the horse can eat the more palatable first. The horse will then eat the other hay leisurely during the night. Another plan is to withhold the good hay until the other is eaten.

Overfeeding, rather than underfeeding, is the common practice when horses are working irregularly. It should be remembered that the amount of feed should vary not only between winter and summer, but also from day to day. It is a waste of feed if the amount is not varied with the degree of work. When horses are to be idle on the following day, as on Sunday, it is well to substitute a bran mash for the Saturday-night grain feed, and reduce the grain feed for Sunday

to approximately half of the normal ration. A mash is made by mixing 3 or 4 pounds of dry bran (per horse) with hot water, and allowing it to steam in a covered receptacle until cool enough to eat. Do not cook or scald the bran by using water that is too hot. The palatability of the mash is increased by the addition of a tablespoon of salt per horse.

Pasture saves feed and labor and the grass acts as a laxative and a general tonic. While good pasture is sufficient for maintaining idle horses, a light supplementary grain ration, nonlaxative and relatively high in protein, is generally advisable for work horses. When horses that are accustomed to a heavy grain ration are turned on pasture for a long idle period, they should be given a small amount of grain for a few days; otherwise they may gorge themselves on the green roughage and suffer impaction, rupture of the stomach, or other serious trouble. When horses are laid off from field work for periods of only a few days at a time, the reduction in grain will depend some-

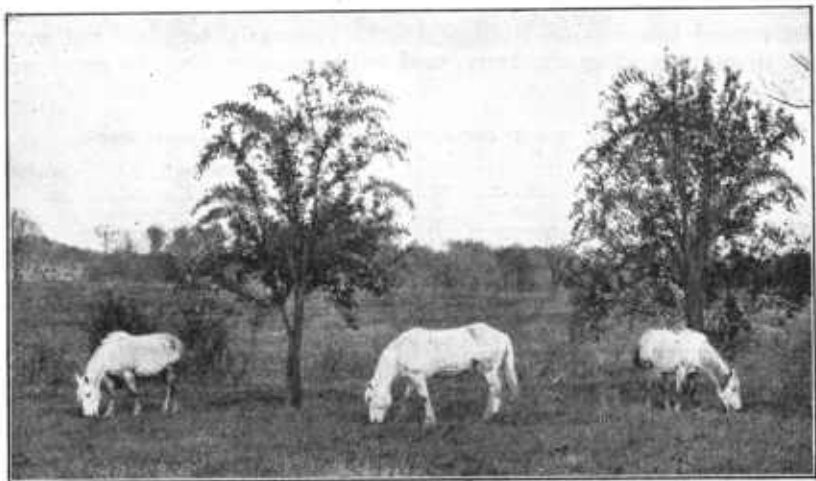


FIG. 5.—Grass acts as a general tonic to the system. Night pasture also provides a place to roll, water at will, and a clean, cool place to rest.

what on the feed value of the pasture, but generally the grain ration at this time should be about half the normal requirement. Irregularity, with sudden changes to green feed, is likely to result in digestive disorders. Turning the horses regularly on pasture at night is a means of keeping the digestive system accustomed to succulent feed. This practice decreases the quantity of hay needed by the horses, but they should receive a small feed of hay with the regular evening grain ration before being turned out. Horses that are turned on night pasture sweat more at work than horses on dry feed, but this is overbalanced by the benefits derived during hot weather, when the pasture provides a place to roll, water at will, and a clean, cool place to rest.

SALT.

Salt should be given frequently at regular intervals, or, better still, should be accessible at all times. When it is given regularly, only enough to meet body requirements will be consumed, while with

irregular use an abnormal appetite is developed for it which is often followed by excessive consumption of salt and consequent indigestion. An average of about three-fourths of an ounce daily should be allowed, but horses doing heavy work and on dry feed consume more salt than under other conditions. Salt is very important, and in many cases a delicate eater or shy drinker benefits by an increased appetite from free access to it.

WATER.

Water is essential to health. When supplied often, the horse may be allowed to drink all he desires. Water is particularly essential during hot weather, when a great deal of moisture is thrown off by sweating. Under ideal conditions the work horse is watered both before and after feeding and again late at night, the night and morning watering hours being especially important if the horse is not turned out to pasture or paddock after the night feed. Many work horses are watered while hot without serious results, but it is better if they are allowed to cool before being watered and fed grain.

WINTERING IDLE HORSES.

Maintaining the farm work horse in healthful condition during the winter is the first start in fitting him for spring work. The horse should not be so fed during the winter that he becomes fat and soft. On the other hand, poor care during the winter, resulting in loss of weight and vitality, so weakens the horse that he is not in condition for spring work, and often his resistance is so lowered as to invite disease.

It is bad management to let a horse lose weight during the winter and then try to bring him back to normal by heavy feeding just before the beginning of spring work. If, however, the horse is thin or run down at the beginning of winter, he should be gradually brought into thrifty physical condition. Winter and early spring feeding should so strengthen the horse that he will be ready for the fitting period and heavy spring work.

The liberal use of roughage, supplemented with the right amount and kind of other nutritious feed, will maintain a horse properly during the winter. Farm horses, except brood mares or growing stock, do well on a ration made up largely of the coarser hays, straw, or corn fodder. Cornstalk fields, grain-stubble fields, or pastures which have not been closely grazed during the summer are very desirable sources of a large part of the winter maintenance feed for horses. The common roughages, as the main part of the ration during this period, will supply enough bulky feed to keep the horse thrifty without putting on superfluous fat. The drinking of a large amount of pure water should be encouraged to increase the utilization of these dry roughages. When necessary, a tank heater should be used to keep the drinking trough free from ice.

It is advisable to supplement the coarser roughages with a legume, such as alfalfa, clover, vetch, soybean, or cowpea hay. These hays are very palatable and should be fed sparingly. They are rich in protein and mineral matter and supply the materials needed to replace those lost in the natural wear of the body. Being somewhat laxative in effect they also help to keep the digestive tract in good

condition. They are especially valuable in connection with straw and similar feed. The use of these hays with the coarser roughages is economical because a supplemental ration of grain is not necessary.

Corn silage, if fed with care, may be utilized in limited amounts in the winter ration of idle work horses. It is generally considered that the amount of corn silage should not exceed 10 pounds daily. Corn silage is bulky, appetizing, succulent, and slightly laxative. None but choice, fresh silage should be given to horses. Severe losses from botulism (forage poisoning) have resulted when these precautions have not been observed. Frozen or moldy silage must not be used under any circumstances.

In some instances, especially when it is not possible to feed a legume hay, a small quantity of grain is necessary to maintain the horses in thrifty condition. Oats are preferred for use with the coarser roughages, but corn and barley are often used in the winter ration, especially when they are cheaper or when an increase in weight is desired. One or two bran mashes a week or a little linseed meal each day is recommended as an aid in keeping the system in good condition and in preventing impaction resulting from the use of large amounts of coarse roughage improperly supplemented.

Pregnant mares require more attention during the winter than the open mare or gelding. As a lick often causes the loss of a colt, the pregnant mare should not be turned out with other horses, especially if she fights with them. Leguminous feeds high in protein and ash are necessary in developing the fetus. Although the feeding of the legume hay is of more importance than a supplemental grain feed, in most cases such feeds as oats, bran, and oil meal should be supplied, the proportions being largely controlled by the condition of the mare and the stage of development of the fetus.

PREPARING FOR SPRING WORK.

During the fitting period preceding the spring season the horse must be so conditioned that he will be able to convert the vitality and energy which has been stored up during the winter into full power during each work day and even be prepared for an "overload" during the peak of the heavy work. The fitting necessary to condition horses for spring work depends largely on the way they have been wintered. The condition of the horse that has been properly cared for in the open during the winter is more nearly the ideal than that of the horse that has been kept in the stable. While the fitting period varies with the condition of the animal and other factors, the average time usually allotted for it is two to four weeks. A horse that is either very thin or very fat requires a longer fitting period than one in thrifty condition with fair flesh. A young horse also requires a longer time for fitting and training than a mature horse, especially if he has just been broken.

The horseman tones up the digestive system of the horse before and during the fitting period so that it will function efficiently when called on for maximum work. This end is usually accomplished by gradually increasing the ration with the work done. Preparation of horses should begin several weeks before they are actually put to heavy work. While the use of coarse, nonsalable feeds is an economic practice during the winter, the horse should gradually be

put on a smaller ration of finer-quality hay early in the spring, and started on a light feed of grain three times daily. When light work has commenced, a 1,400-pound horse should be getting about 14 pounds of grain together with 14 or 15 pounds of fine-quality hay, daily. This gradual change from coarse roughages to good-quality feed will have prepared the digestive tract for the use of from 18 to 19 pounds of grain, with from 16 to 18 pounds of hay, which will be needed by the horse at heavy work, such as disking or plowing.

It should be remembered that changes in both kind and quantity of feed should always be made gradually.

It is also necessary that the work horse be gradually conditioned, or hardened, for heavy work. By increasing the work gradually, the muscles are hardened, and the horse gradually develops strength for the heaviest work. During this period, special attention must be given to the shoulders, a discussion of which will be found on page 15.

GROOMING AND CLIPPING.

Grooming improves the general appearance of a horse, and, what is more important, removes the internal waste of the body which has been exuded through the pores of the skin, and the loose scurf.



FIG. 6.—Good grooming is essential to the conditioning and health of the animal. Left to right: Bristle or body brush, corrugated comb, and fiber or mud brush.

If this waste matter is not removed by thorough grooming, the pores of the skin will be stopped, normal body activities hindered, and the general health of the animal impaired. This condition is indicated by a harsh skin and dry, rough appearance of the hair. The skin of a well-groomed, healthy animal is pliable and soft, and the hair glossy. Because regular grooming so improves the action of the digestive organs and the utilization of feed, it is often said that a good grooming is as valuable as a feed.

The amount of grooming necessary varies considerably. Horses that are pastured, or are outdoors, do not require much grooming, as under these conditions there is less perspiration and the waste products are more generally thrown off through the bowels and kidneys. Fast or active work, together with heavy feeding, however, causes free perspiration, throwing off of body waste through the skin, making regular grooming necessary.

Care and thoroughness are essential in grooming. It is a good plan to groom the horse at night, for he will rest better, and a good brisk brushing is sufficient the next morning before going to the field. Turning the horse out at night, or allowing him to roll, only partially removes the need of the evening grooming, for only the high spots are touched and very little of the body-waste material is removed.

The common equipment for grooming is the currycomb, dandy brush, and body brush (fig. 6), while the rub rag, mane comb, and footpick are often needed. The currycomb should be used only when the horse is sweaty and dirty. As the skin is very sensitive, a round-corrugated comb is preferred. The dandy or fiber brush should be laid on heavily the first time over the horse. The body brush is then used to remove the loose body-waste substance and scurf, and for the careful cleaning of the fetlocks and pasterns. The feet

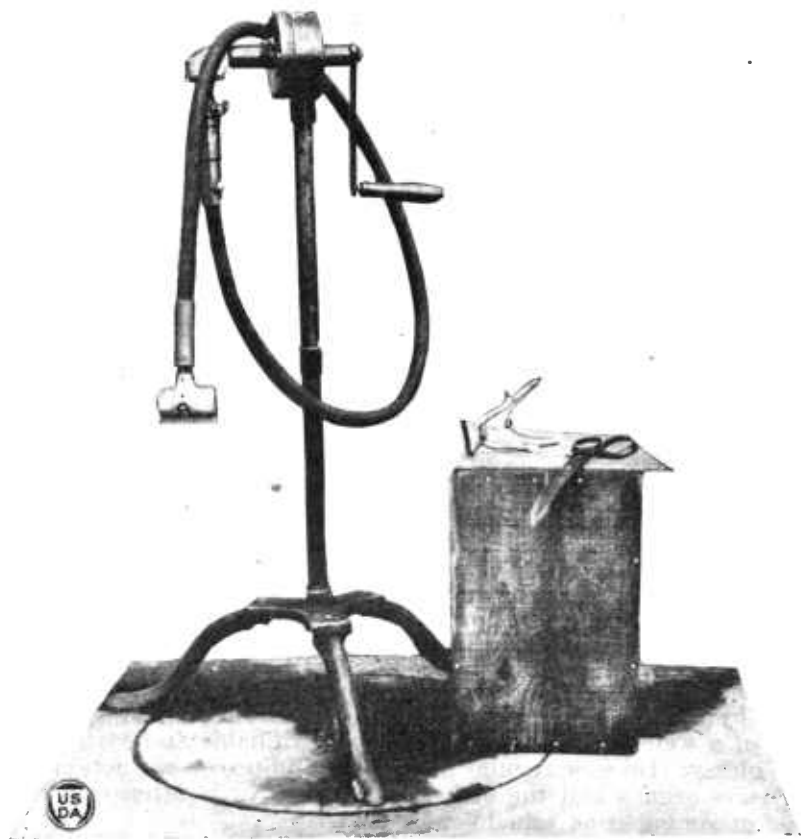


FIG. 7.—Clipping outfit—a hand-power clipping machine, with small hand clipper and shears on box. Clipping saves the horse discomfort in hot weather.

of farm horses should also be cleaned and the mane and tail brushed and thinned regularly.

Farm work horses are seldom washed. When this is done, however, all parts should be thoroughly washed with water and soap and afterwards completely dried. Sawdust or bran is good for drying the legs.

Clipping is advisable, as it saves the horse a great deal of discomfort, and makes grooming easier. (See fig. 7.) The removal of the heavy winter coat makes the horse less likely to sweat, and helps to prevent shoulder soreness. The horse must be blanketed,

however, for a time, if clipped early in the spring. The foretop of a farm work horse is often trimmed, but a sore neck is less likely if the mane is not trimmed at the collar seat. When draft horses are being produced for city use, the foretop should not be removed, as it is needed to satisfy the demands of the city trade.

THE HARNESS, FITTING AND CARE.

All parts of the harness should fit the horse comfortably. It is of special importance for the collar to fit, so that when it is adjusted the pull will be distributed equally over the shoulders. The best plan is to have a good, heavy, leather collar for each horse, and always use his own collar on him. To fit, there should be barely room for the flat hand to pass between the collar and the windpipe, and for the finger tips to pass at the side of the neck just above the



FIG. 8.—Just room for the flat hand between collar and windpipe.



FIG. 9.—Room for the finger tips at the side.

THE FIRST STEP IN ELIMINATING SORE SHOULDERS IS A CORRECTLY FITTING COLLAR.

shoulder points. (See figs. 8 and 9.) A short collar chokes the horse when pulling, while a collar which is too long bruises the shoulder points and chafes the neck at the withers. A narrow collar will pinch. A wide collar will bring pressure and irritation on the side of the shoulder. The condition of the horse should be taken into account when a new collar is fitted, due allowance being made for excess hair and surplus flesh, if the fitting is done in the spring.

Sweat pads are a poor means of making a collar fit. They are hot, and easily wrinkled, stick to the shoulder, have a surface that is hard to keep clean, get hard when dry, and cause more sore shoulders than do smooth and solid surfaces. Hames that do not fit offset a good-fitting collar and cause sore shoulders, whereas properly fitted hames should assist in bringing about the right setting for the pull. The hames should fit snugly, and be drawn tightly on the collar, so that the point of draft will be about one-third of the distance above the point of the shoulder.

All other parts of the harness must also be properly adjusted and fitted. In adjusting the bridle, the bit should rest snugly on the bars of the mouth, and the checkrein should be used but mildly. The body parts of the harness should fit snugly, but not so as to retard free full motion, while the adjustment of traces and lines is required for an even pull and perfect control.

The life of the harness is prolonged by the care given it. When the harness is not in use, it should be hung up carefully, in a dry harness room. A little care in removing the collar from the horse, keeping it in shape, and hanging it on a peg or rack by itself, will probably prolong its life very materially. Many collars are broken and ruined by careless handling. Cleaning the face of the collar, and other bearing surfaces of the harness, with a damp cloth, at the time the harness is removed from the horse, keeps these parts smooth and firm, thereby helping to prevent galls and sore shoulders, as



FIG. 10.—Harness-repair kit, consisting of clamp, 4-tube punch, riveting set, pliers, awls, knife, needles, thread, and wax.

well as adding to the life of the leather. While most of the mending must take place at the time of the breakage, it is well to go over all harness carefully during dull seasons, replacing weak parts and restitching ripped places. A harness repair kit (fig. 10) is essential equipment for every farmer. The kit consists of a riveting machine, 4-tube punch, a pair of pliers, awls, an assortment of needles, a ball of good thread with wax, a wood clamp, leather, snaps, buckles, and cleansing and oiling materials. The round knife, edged tools, and creasers make possible the use of side leather and more complete saddlery work.

A thorough overhauling, cleaning, and oiling of the harness once or twice a year in addition to the daily cleaning of bearing surfaces and careful handling, prolong its life. At least once a year the harness should be taken apart so that all parts may be thoroughly cleaned, oiled, and repaired. To clean, soak the harness about 15 minutes in lukewarm water in which a mild soap has been dissolved. Adding a little soda makes the water a better solvent.

Each strap should be scrubbed carefully and rinsed well. When nearly dry rub edge blacking on all parts where required, clean the metal parts, and make needed repairs. The leather should then be oiled while still damp, using neat's-foot oil, castor oil, or one of the prepared harness oils. A very good mixture for heavy harness is neat's-foot oil, mixed with tallow to make a paste of about the consistency of butter, warmed slightly.³ All oils should be thoroughly rubbed into the harness, and be allowed to dry slowly, being hung neither in the sun nor close to a fire. When the oil has dried, the straps should be rubbed well with a lather made of white castile soap, or a good harness soap. This will remove surplus

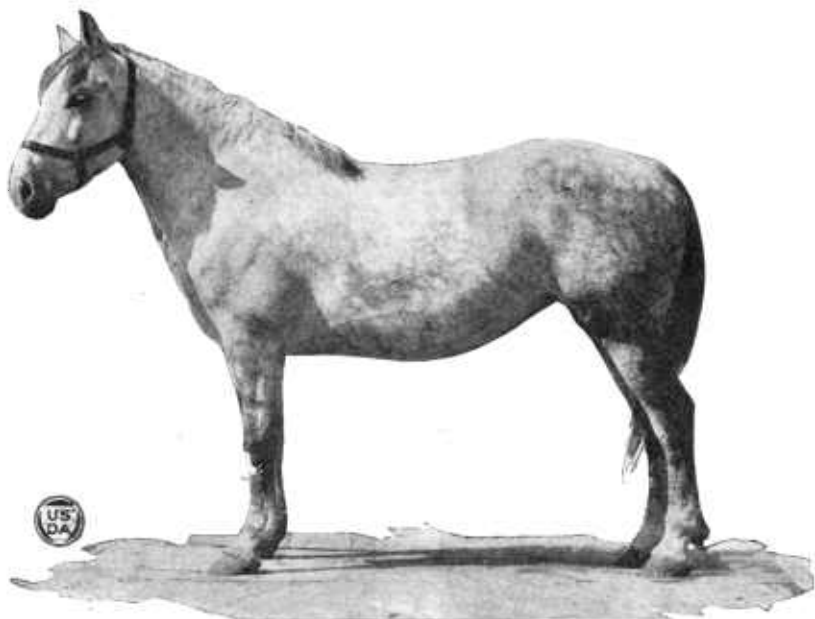


FIG. 11.—Farm mare with properly trimmed feet. Regular care of the feet, so that the horse stands square and plumb, will relieve needless tendon strain and avoid deformity of the feet, unsoundness, and improper action.

grease and take away the greasy appearance. With regular care the leather will be clean and pliable. Frequent sponging will keep the harness like new.

PREVENTING SORE SHOULDERS.

Correct fitting of the collar, and adjustment of the harness, is a big step in the elimination of sore shoulders. The shoulders of work animals should be given special attention during the spring fitting season until the muscles harden and winter hair sheds off. Clean the shoulders carefully after the day's work is done, and before harnessing next morning. When the harness is taken off, wash the shoulders with warm water and castile soap, and rinse with cold water to which a small amount of salt has been added. This treat-

³ For further information, see Farmers' Bulletin 1183, "The Care of Leather."

ment may be discontinued after two or three weeks, but careful daily grooming and cleaning of the collar are always required. A little time given in special attention to the shoulders in the field during the early spring is time well used. Raise the collar frequently and clean the sweat, dirt, and dead hair from both the shoulder and collar. Lift the collar forward on the neck and leave



FIG. 12.—Left forefoot of horse in Figure 11, before trimming.



FIG. 13.—Same foot, after trimming. Notice change in angle of pastern.



FIG. 14.—Bottom of hoof before trimming.



FIG. 15.—Same view, after trimming.

it there for a few minutes, so that the shoulder surface may cool off. It is especially important that the neck and shoulders be cleaned and given a chance to dry and cool off during the noon hour.

CARE OF THE FEET.

Care of the feet at all times, so the horse stands square and plumb, will relieve needless strain on tendons and prevent deformity of the feet, unsoundness, and improper action. (See figs. 12 to 15.) When

the horse is not shod, loose pieces and rough corners of horn should be trimmed off with nippers, and the wall leveled regularly with the rasp.

Horses used on hard roads, and in some cases those running on hard or frozen fields, should be shod. The shoes should be made to fit, and the reshoeing or resetting of the old shoes should be done regularly to prevent injury to feet and legs. Toe calks and heels should be provided during the winter to prevent slipping.

When the feet are cleaned daily, they usually remain healthy and the wall of the hoof tough, whereas lack of exercise and close stabling under foul conditions cause an unhealthy condition of the feet. The hoof occasionally becomes brittle, however, because of lack of moisture. Sometimes the right moisture conditions are obtained by soaking or poulticing the hoof and then dressing it with neat's-foot oil or sweet oil to prevent further drying out. Packing the feet with powdered white rock or blue clay is also a good corrective, and restores a healthy condition. Frequent cleaning of the feet of shod horses tends to prevent inflammation and more serious troubles which commonly result from stones or clods packing in the sole of the foot.

CARE OF THE TEETH.

At least once during the year a competent veterinarian should examine the teeth of all horses. Generally all that will be required is the "floating" or filing off of the long, sharp corners which are due to uneven wearing. This roughness first causes sore tongues or cheeks, followed by a lack of proper mastication together with digestive troubles. Older horses particularly are often much benefited by proper attention to the teeth.

HINTS FOR THE HORSEMAN.

Make hitches carefully, in order that the pull will be at the center of draft, and that each horse will pull his share of the load. The strongest horse should usually have as much of the load as suits his power.

Do not work a slow horse and a fast horse together. There will be friction and loss of power, in addition to irritation to both driver and horses.

Give special consideration to the arrangement of horses that are hitched three or four abreast. If a horse worries when worked between other horses, rearrange the team so that this horse works quietly.

At the beginning of the day's work, warm up the horses gradually. The digestive tract will be emptied, the muscles and joints limbered up, the collar will be made pliable and set to the shoulder, and the whole machine will be in better condition for the day's work.

Work the horse at his normal gait in the field. He can not work efficiently above his normal gait for any great length of time, even though he is pulling a light load.

Sweating during hot weather indicates that the cooling system is working. Puffing may be a serious warning, especially if the horse has ceased to sweat, and overheating may result if the horse is pushed at this time. A brief rest, a swallow of water, or a sponging of the mouth will often restore normal action and avoid serious consequences.

An important phase of horse husbandry is to avert common ailments. Every horseman should know how to take necessary precautions in avoiding various troubles, to care for minor ailments, and start immediate-relief measures until the services of a competent veterinarian can be obtained.*

*The department has published a book entitled "Diseases of the Horse." This book may be obtained free from a Senator or Representative in the Congress of the United States. Or, it may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., for \$1. (Stamps are not accepted.)

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March 4, 1924.

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